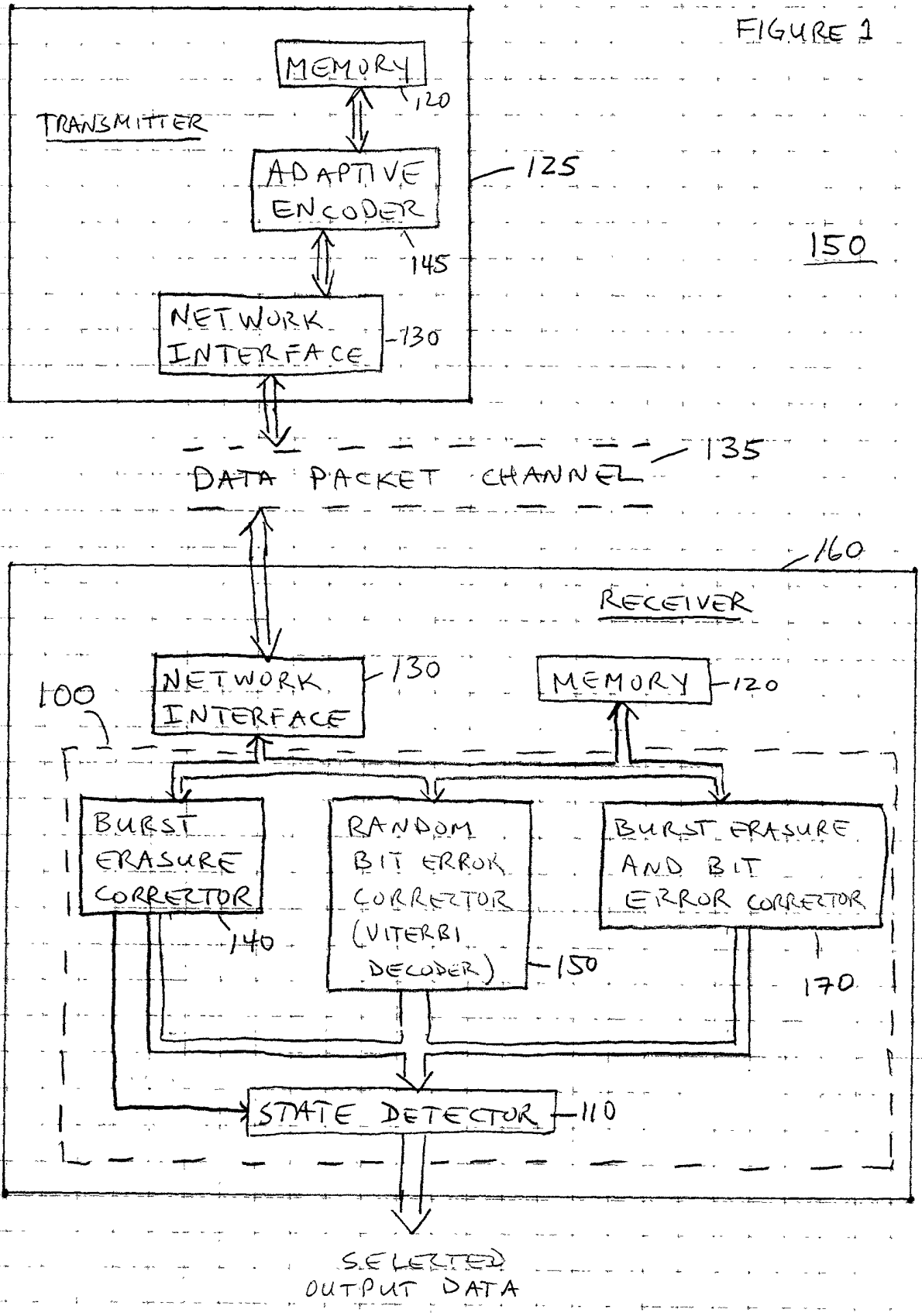
FIGURE 1


MEMORY
120
TRANSMITTER
ADAPTIVE ENCODER
125
145
150
NETWORK INTERFACE
130
135
DATA PACKET CHANNEL
160
RECEIVER
NETWORK INTERFACE
130
MEMORY
120
100
BURST ERASURE CORRECTOR
140
RANDOM BIT ERROR CORRECTOR (VITERBI DECODER)
150
BURST ERASURE AND BIT ERROR CORRECTOR
170
STATE DETECTOR
110
SELECTED OUTPUT DATA

$\vec{y}[i] =$	$x[i]$	$x[i-3]$
$\vec{y}[i+1] =$	$x[i+1]$	$x[i-2]$
$\vec{y}[i+2] =$	$x[i+2]$	$x[i-1]$
$\vec{y}[i+3] =$	$x[i+3]$	$x[i]$
$\vec{y}[i+4] =$	$x[i+4]$	$x[i+1]$
$\vec{y}[i+5] =$	$x[i+5]$	$x[i+2]$
$\vec{y}[i+6] =$	$x[i+6]$	$x[i+3]$
$\vec{y}[i+7] =$	$x[i+7]$	$x[i+4]$

FIGURE 2

$\vec{y}[0] =$	$x_0[0]$	$x_1[0]$	$x_2[0]$	0
$\vec{y}[1] =$	$x_0[1]$	$x_1[1]$	$x_2[1]$	$x_0[0]$
$\vec{y}[2] =$	$x_0[2]$	$x_1[2]$	$x_2[2]$	$x_0[1] \oplus x_1[0]$
$\vec{y}[3] =$	$x_0[3]$	$x_1[3]$	$x_2[3]$	$x_0[2] \oplus x_1[1] \oplus x_2[0]$
$\vec{y}[4] =$	$x_0[4]$	$x_1[4]$	$x_2[4]$	$x_0[3] \oplus x_1[2] \oplus x_2[1]$

FIGURE 3

	$\vec{y}[0] =$	$x_0[0]$	$x_1[0]$	$x_2[0]$	0
	$\vec{y}[1] =$	$x_0[1]$	$x_1[1]$	$x_2[1]$	$x_0[0]$
	$\vec{y}[2] =$	$x_0[2]$	$x_1[2]$	$x_2[2]$	$x_0[1] \oplus x_1[0]$
	$\vec{y}[3] =$	$x_0[3]$	$x_1[3]$	$x_2[3]$	$x_0[2] \oplus x_1[1] \oplus x_2[0]$
symbol erased →	$\vec{y}[4] =$	$x_0[4]$	$x_1[4]$	$x_2[4]$	$x_0[3] \oplus x_1[2] \oplus x_2[1]$
decode $x_0[4]$ here →	$\vec{y}[5] =$	$x_0[5]$	$x_1[5]$	$x_2[5]$	$x_0[4] \oplus x_1[3] \oplus x_2[2]$
decode $x_1[4]$ here →	$\vec{y}[6] =$	$x_0[6]$	$x_1[6]$	$x_2[6]$	$x_0[5] \oplus x_1[4] \oplus x_2[3]$
decode $x_2[4]$ here →	$\vec{y}[7] =$	$x_0[7]$	$x_1[7]$	$x_2[7]$	$x_0[6] \oplus x_1[5] \oplus x_2[4]$

FIGURE 4

ASSOCIATED

	$\vec{y}[0] =$	$x_0[0]$	$x_1[0]$	$x_2[0]$	0
	$\vec{y}[1] =$	$x_0[1]$	$x_1[1]$	$x_2[1]$	0
	$\vec{y}[2] =$	$x_0[2]$	$x_1[2]$	$x_2[2]$	$x_0[0]$
	$\vec{y}[3] =$	$x_0[3]$	$x_1[3]$	$x_2[3]$	$x_0[1]$
	$\vec{y}[4] =$	$x_0[4]$	$x_1[4]$	$x_2[4]$	$x_0[2] \oplus x_1[0]$
	$\vec{y}[5] =$	$x_0[5]$	$x_1[5]$	$x_2[5]$	$x_0[3] \oplus x_1[1]$
symbol erased →	$\vec{y}[6] =$	$x_0[6]$	$x_1[6]$	$x_2[6]$	$x_0[4] \oplus x_1[2] \oplus x_2[0]$
symbol erased →	$\vec{y}[7] =$	$x_0[7]$	$x_1[7]$	$x_2[7]$	$x_0[5] \oplus x_1[3] \oplus x_2[1]$
recover $x_0[6]$ →	$\vec{y}[8] =$	$x_0[8]$	$x_1[8]$	$x_2[8]$	$x_0[6] \oplus x_1[4] \oplus x_2[2]$
recover $x_0[7]$ →	$\vec{y}[9] =$	$x_0[9]$	$x_1[9]$	$x_2[9]$	$x_0[7] \oplus x_1[5] \oplus x_2[3]$
recover $x_1[6]$ →	$\vec{y}[10] =$	$x_0[10]$	$x_1[10]$	$x_2[10]$	$x_0[8] \oplus x_1[6] \oplus x_2[4]$
recover $x_1[7]$ →	$\vec{y}[11] =$	$x_0[11]$	$x_1[11]$	$x_2[11]$	$x_0[9] \oplus x_1[7] \oplus x_2[5]$
recover $x_2[6]$ →	$\vec{y}[12] =$	$x_0[12]$	$x_1[12]$	$x_2[12]$	$x_0[10] \oplus x_1[8] \oplus x_2[6]$
recover $x_2[7]$ →	$\vec{y}[13] =$	$x_0[13]$	$x_1[13]$	$x_2[13]$	$x_0[11] \oplus x_1[9] \oplus x_2[7]$

FIGURE 5

	$\vec{y}[0] =$	$x_0[0]$	$x_1[0]$	$x_2[0]$	0
	$\vec{y}[1] =$	$x_0[1]$	$x_1[1]$	$x_2[1]$	$P\{x_0[0], 0, 0, 0\}$
	$\vec{y}[2] =$	$x_0[2]$	$x_1[2]$	$x_2[2]$	$P\{x_0[1], x_0[0], 0, 0\}$
symbol erased →	$\vec{y}[3] =$	$x_0[3]$	$x_1[3]$	$x_2[3]$	$P\{x_0[2], x_0[1], x_1[0], x_2[0]\}$
symbol erased →	$\vec{y}[4] =$	$x_0[4]$	$x_1[4]$	$x_2[4]$	$P\{x_0[3], x_0[2], x_1[1], x_2[1]\}$
recover $x_0[3], x_0[4]$ here →	$\vec{y}[5] =$	$x_0[5]$	$x_1[5]$	$x_2[5]$	$P\{x_0[4], x_0[3], x_1[2], x_2[2]\}$
recover $x_1[3], x_2[3]$ here →	$\vec{y}[6] =$	$x_0[6]$	$x_1[6]$	$x_2[6]$	$P\{x_0[5], x_0[4], x_1[3], x_2[3]\}$
recover $x_1[4], x_2[4]$ here →	$\vec{y}[7] =$	$x_0[7]$	$x_1[7]$	$x_2[7]$	$P\{x_0[6], x_0[5], x_1[4], x_2[4]\}$

FIGURE 6

D-3556-4-12-84

$\vec{y}[i] =$	$x[i]$	$x[i-3] \oplus x[i-4] \oplus x[i-5]$
$\vec{y}[i+1] =$	$x[i+1]$	$x[i-2] \oplus x[i-3] \oplus x[i-4]$
$\vec{y}[i+2] =$	$x[i+2]$	$x[i-1] \oplus x[i-2] \oplus x[i-3]$
$\vec{y}[i+3] =$	$x[i+3]$	$x[i] \oplus x[i-1] \oplus x[i-2]$
$\vec{y}[i+4] =$	$x[i+4]$	$x[i+1] \oplus x[i] \oplus x[i-1]$
$\vec{y}[i+5] =$	$x[i+5]$	$x[i+2] \oplus x[i+1] \oplus x[i]$
$\vec{y}[i+6] =$	$x[i+6]$	$x[i+3] \oplus x[i+2] \oplus x[i+1]$
$\vec{y}[i+7] =$	$x[i+7]$	$x[i+4] \oplus x[i+3] \oplus x[i+2]$

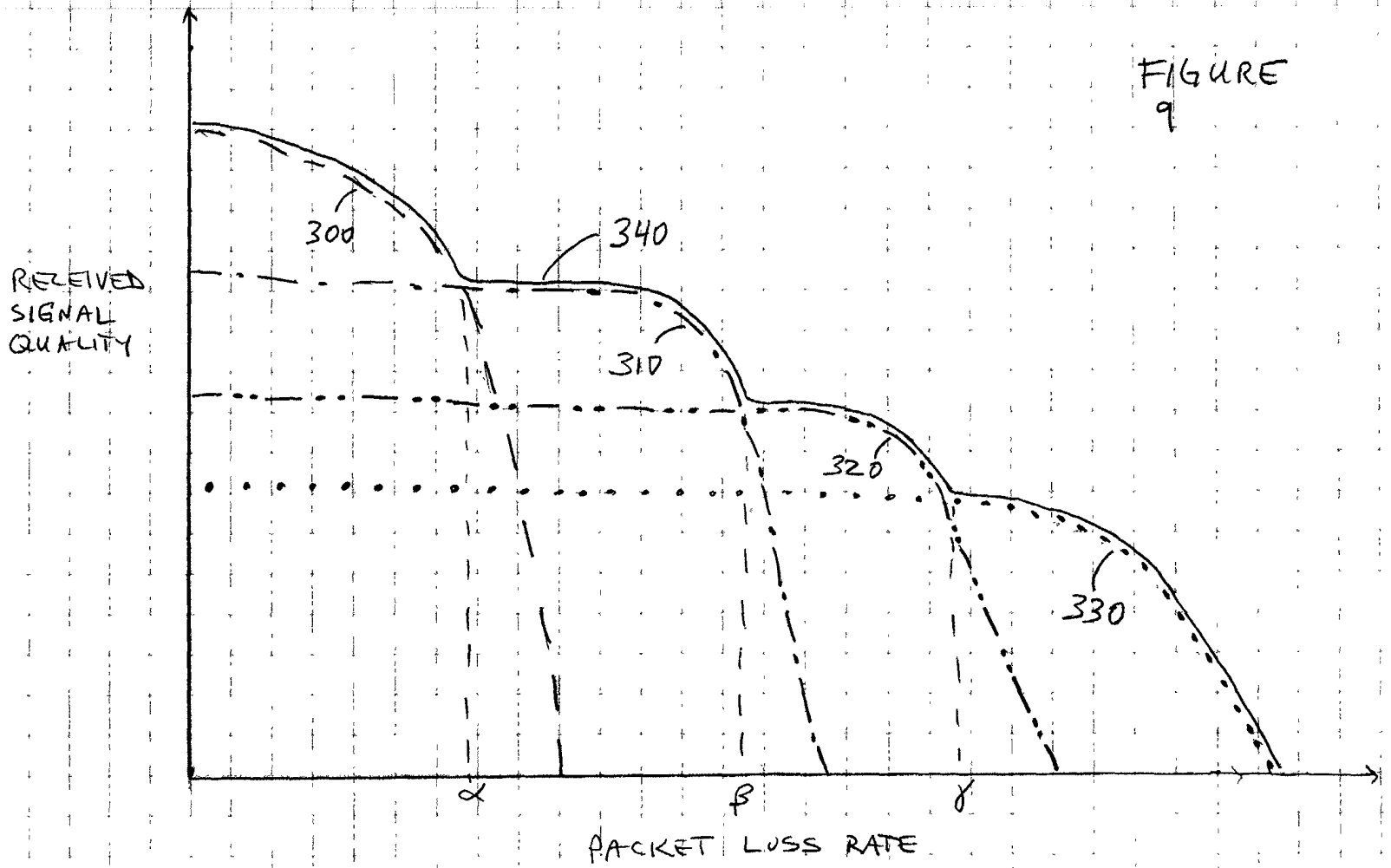
FIGURE 7

$$
\begin{aligned}
x[i-1] &= y_0[i-1] \\
x[i] &= y_0[i] \\
x[i+1] &= y_1[i+4] \oplus x[i] \oplus x[i-1] \\
x[i+2] &= y_1[i+5] \oplus x[i+1] \oplus x[i] \\
x[i+3] &= y_1[i+6] \oplus x[i+2] \oplus x[i+1]
\end{aligned}
$$

FIGURE 8

TO62FT "T9536660

FIGURE 9



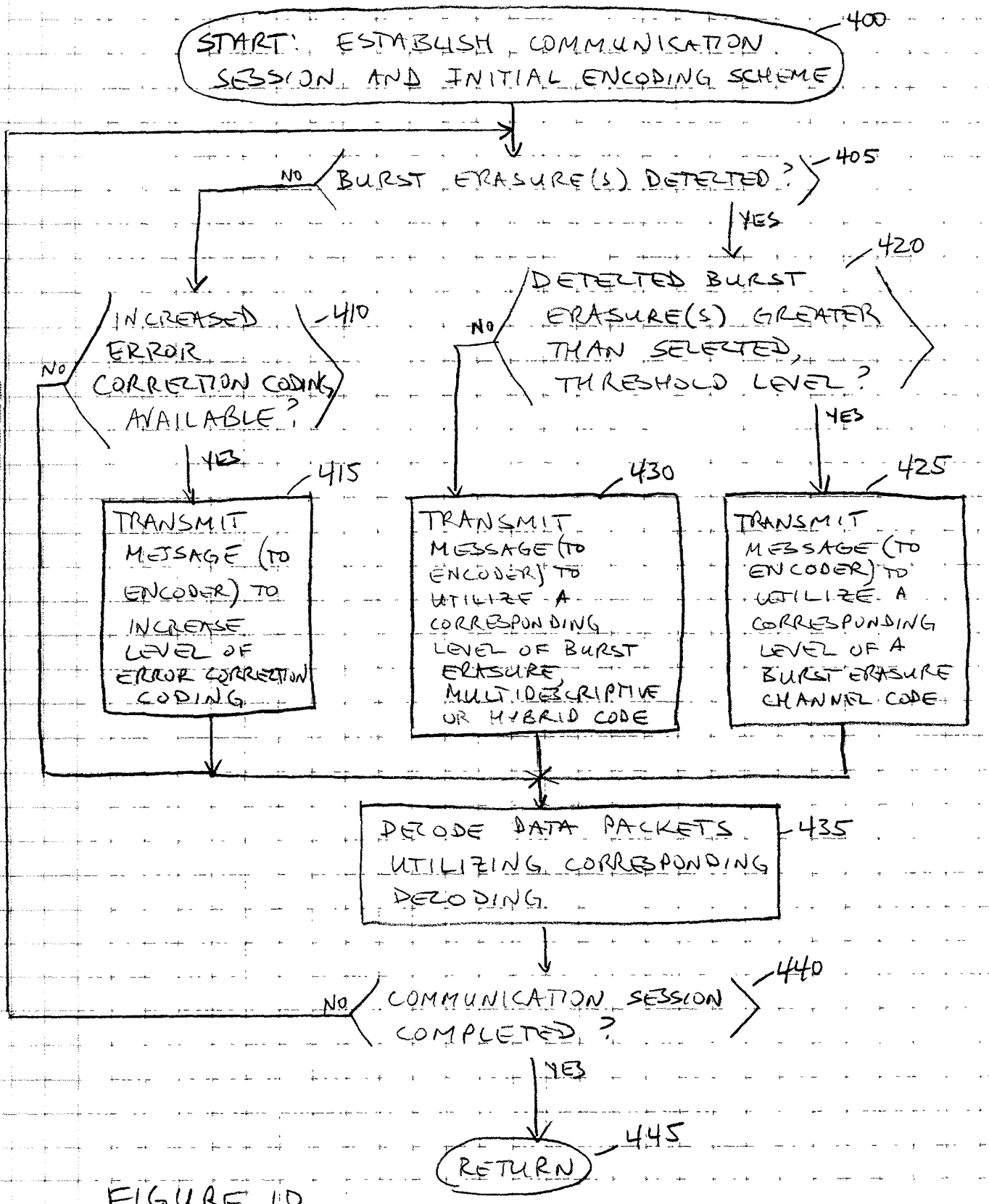

START: ESTABLISH COMMUNICATION SESSION AND INITIAL ENCODING SCHEME
400
BURST ERASURE(S) DETECTED?
405
NO
YES
DETECTED BURST ERASURE(S) GREATER THAN SELECTED THRESHOLD LEVEL?
420
NO
YES
INCREASED ERROR CORRECTION CODING AVAILABLE?
410
NO
YES
TRANSMIT MESSAGE (TO ENCODER) TO INCREASE LEVEL OF ERROR CORRECTION CODING
415
TRANSMIT MESSAGE (TO ENCODER) TO UTILIZE A CORRESPONDING LEVEL OF BURST ERASURE MULTIDESCRIPTIVE OR HYBRID CODE
430
TRANSMIT MESSAGE (TO ENCODER) TO UTILIZE A CORRESPONDING LEVEL OF A BURST ERASURE CHANNEL CODE
425
DECODE DATA PACKETS UTILIZING CORRESPONDING DECODING.
435
COMMUNICATION SESSION COMPLETED?
440
NO
YES
RETURN
445

FIGURE 10